

REPRO TRACKS

by Cliff Lamb, Texas A&M University

Management of Young Beef Females

Pre- and postweaning nutritional supplementation of developing heifers.

Development of replacement heifers is a major economic investment, with costs associated with managing heifers prior to weaning their first calf recovered through subsequent calf crops. In beef cow-calf operations, profitability can be directly tied to the productive lifespan of cows within the herd. Management decisions made over the first year of life can influence heifer performance and reproduction, as well as play a key role in establishing heifer fertility and longevity. Therefore, it is critical to understand not only how management practices affect reproductive performance and lifetime productivity, but evaluate if fertility can be enhanced based on development strategies utilized.

The primary goal of development of replacement heifers is to optimize reproductive performance, economic efficiency and lifetime productivity of heifers. Heifers are expected to grow to 65-75% of mature size, attain puberty and produce their first calf within the first two years of life.

Nutrition has been a major focus within heifer development research, because it is the management tool producers have the most control over. Extensive research has been conducted evaluating the effects of nutritional management during development on puberty attainment,

reproductive tract development, fertility and reproductive efficiency in beef heifers.

This research has not only established a strong relationship between nutrition and reproduction, but has sought to identify management strategies that can be utilized in both intensive and low-input or extensive systems. Before implementing a management or nutritional strategy, producers should understand the relative benefits of those strategies.

Preweaning management

Preweaning body weight gain influences age at puberty more than postweaning growth. Heifers who attain puberty at the beginning of the breeding season have been reported to have an increase in average daily gain from birth to weaning and were heavier at weaning. In addition, a greater proportion of heifers pubertal by the start of the first breeding season are those that are born in the first 21 days of the calving season.

Early calthood nutritional strategies and early weaning have provided additional insights into the effects of nutrition and management of calves before 7 months of age. Some of this work has evaluated programming the onset of puberty through the use of stair-step type diets, where nutrition is increased

and decreased during different developmental windows.

The onset of puberty occurred at a younger age in early-weaned heifers fed to target a high rate of gain between four and six months of age compared to heifers fed to attain a low rate of gain during the same developmental window.

In the same study, early-weaned heifers fed to attain a low rate of gain between four and six months of age, who were then stepped up to target a high rate of gain from six to nine months of age, had the majority of heifers attain puberty between 11 and 14 months of age.

While preweaning nutrition and early weaning can decrease age at puberty, challenges exist in implementing these strategies. In most cow-calf operations, especially extensive systems, management of preweaning nutrition is limited. Creep-feeding or creep-grazing can increase nutrient intake of calves and increase preweaning performance.

In many scenarios, creep-feeding has a low economic return and is not an economically viable option for many operations. Furthermore, producers generally utilize early-weaning strategies in response to drought or limited feed conditions or as a means to improve reproductive performance within the cow herd. Regardless of the potential

improvement in age at puberty, increased feed inputs and labor, as well as challenges with managing lighter-weight calves, have limited the utilization of early weaning as a management strategy for developing replacement heifers.

Postweaning supplementation

Increasing the postweaning energy intake has led to positive effects on the reproductive physiology of heifers. Research led by Philippe Moriel at the University of Florida has demonstrated heifers supplemented with concentrate dry matter at 1.75% of their body weight for the entire development period (seven months from weaning through breeding) had greater

overall average daily gain, puberty attainment before the start of the breeding season, and pregnancy rates compared to heifers supplemented at 1.25% of their body weight. In addition, lifetime productivity is significantly improved when heifers calve early in their first calving season. Supplementation at 1.75% also increased the percentage of heifers calving during the first four weeks of the calving season.

Conclusion

Nutritional management of heifers during the first year of life is critical in establishing the foundation for fertility, productivity and longevity in a beef herd. Decisions made regarding nutritional management

of heifers can help program puberty attainment, fertility and the ovarian reserve, potentially allowing for increases in reproductive performance and longevity, resulting in improved profitability.

Overall, identification of management strategies that effectively use resources, enhance reproduction and longevity, as well as allow adaptation of heifers to future production environments will provide producers additional opportunities for profitability and success in their operations. **AJ**

Editor's note: Cliff Lamb is the animal science department head and a professor at Texas A&M University in College Station, Texas.





H P C A Enhance 320

Birth Date: 08-10-2020 | Cow ++19820110
Sire: SydGen Enhance
Dam: H P C A Sure Fire S198 (G A R Sunrise)

Dam is a full sister to the \$1,250,000 valued H P C A Sure Fire P24. Has been flushed four times for an average of seven high quality embryos. Sell bred to H P C A Zephyr for a March 2024 calf.

CED	BW	WW	YW	SC	DOC	HS	MH	Milk	CW	MARB	REA	\$Maternal	\$Weaning	\$Feedlot	\$Grid	\$Beef	\$Combined
+12 10%	-9 10%	+67 20%	+127 15%	+29 85%	+34 1%	+33 15%	+3 50%	+32 20%	+51 25%	+1.38 2%	+1.04 3%	+76 15%	+72 10%	+101 15%	+98 1%	+199 1%	+334 1%



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